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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/713,410

11/14/2003

Bryan M. Cantrill

03226.352001; SUN040254

7010

32615 7590 02/08/2007  
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EXAMINER

VO, TED T

ART UNIT

PAPER NUMBER

2191

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/08/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/713,410

Applicant(s)

CANTRILL, BRYAN M.

Examiner

Ted T. Vo

Art Unit

2191

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 3/15/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. This action is in response to the communication filed on 11/14/2003.

Claims 1-25 are pending in the application.

#### ***Claim Rejections - 35 USC § 101***

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. The claims 11-22 are rejected under 35 U.S.C 101 because the claimed invention is directed to non-statutory subject matter.

As per claims 11-19, the claims recite an apparatus for tracing, where the apparatus fails to be as a tangible apparatus. No limitations in the claims show the apparatus as being a hardware-embodied apparatus. This apparatus comprises software elements such as tracing framework and a property file. Thus, the apparatus is software/program per se and fails to be statutory claim.

As per claims 20-22, the claims recite a system having nodes comprising a tracing framework and a property file where the system fails to be claimed as a tangible system. This system is a data structure per se and fails to be statutory claim.

#### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 1-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-25 have a feature, "anonymous consumer state". However, the specification fails to provide an adequate description for this feature. A claim feature that is unclear and vague would cause the claim to be indefinite because it would be differently interpreted in various ways. The interpretation of this feature, "anonymous consumer state", is whatever information traced at an instrumentation point.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Tamches, "Fine-Grained Dynamic Instrumentation of Commodity Operating System Kernels", University of Wisconsin, 2001.

Given the broadest reasonable interpretation of followed claims in light of the specification.

As per Claim 1: Tamches discloses, ***A method for tracing an instrumented program*** (Privileged user program with instrumentation) ***on a system during booting*** (Figure 3.1, p. 27); ***comprising:***

***loading object code defining enabling information*** (see p 27, i.e. instrument code) ***into a property file***

(a privileged user program associated with Code Patch Heap, for example, see p. 49, Figure 4.1, the 'Code Patch' contains) ***associated with a tracing framework*** (i.e. 'kerninstd');

***rebooting the system*** (i.e. kerninstd is attached to a running kernel, discussed in 3.2 Bootstrapping, p. 27, or seen in Figure 3.1);

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***processing the property file to enable the tracing framework*** (i.e. mapping Code Patch Heap heaps into kernel space of the running kernel), ***wherein enabling the tracing framework comprises creating an anonymous consumer state*** (i.e. profile information, within kernel and user programs, includes data cache miss or bottlenecks, or arbitrary generated by the tracing during the running kernel associated with user programs (p. 70-71), etc.): ***anonymous consumer state***; ***and***  
***tracing the instrumented program using the enabled tracing framework*** (Figure 3.1).

As per Claim 2: Tamches discloses, *The method of claim 1, further comprising:*

*associating the anonymous consumer state with a consumer* (e.g. a privileged user programs that is run with the kernel, the system of Figure 3.1 can trace data cache miss, bottle neck, etc, (Chapter 5, p. 70).

As per Claim 3: Tamches discloses, *The method of claim 2, wherein the anonymous consumer state is converted to a consumer state after the anonymous consumer state is associated with the consumer* (i.e. the trace information associated with the privileged user program).

As per Claim 4: Tamches discloses, *The method of claim 3, wherein the consumer can access the information obtained during tracing associated with the anonymous consumer state, after the anonymous consumer state is associated with the consumer* (See Figure 3.1, within privileged user programs and kernel).

As per Claim 5: Tamches discloses, *The method of claim 1, further comprising:*

*loading a kernel into the system, wherein the kernel is configured to load the property file as soon as possible after the kernel is loaded* (See Figure 3.1, tracing kernel).

As per Claim 6: Tamches discloses, *The method of claim 1, further comprising:*

*defining a tracing operation source code* (Figure 3.1 instrumentation); ***and***

*generating the object code using the tracing operation source code* (Figure 3.1, e.g. Patch code).

As per Claim 7: Tamches discloses, *The method of claim 1, wherein the enabling information defines a probe to enable and an action to perform when the probe is encountered during tracing of the instrumented program* (instrumentation of patched code defines a probe).

As per Claim 8: Tamches discloses, *The method of claim 1, wherein the property file is associated with a tracing framework driver* (See Figure 3.1, where Code Patch Heap is associated with kerninstd).

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As per Claim 9: Tamches discloses, *The method of claim 7, wherein the property file is processed when the tracing framework driver file is loaded into the system* (the operating mechanism of the system in Figure 3.1).

As per Claim 10: Tamches discloses, *The method of claim 1, wherein information obtained during tracing associated with the anonymous consumer state is stored in a kernel-level buffer* (such as logs information, or kernel memory, p. 56).

As per claim 11: Tamches discloses, *An apparatus for tracing an instrumented program on a system during booting,*

*comprising: a tracing framework* (e.g., p. 27, Figure 3.1, a framework such as Application(s) of Dynamic Kernel Instrumentation + kerninstd) *configured to support an anonymous consumer state* (e.g., whatever states of user-programs and kernel programs used in the system of figure 3.1) and

*configured to trace* (the system in the Figure 3.1 is configured) *the instrumented program using the anonymous consumer state* (a program with patch code from Code Patch Heap attached in the kernel space); and

*a property file configured to store an object code* (code patch) *defining enabling information to create the anonymous consumer state* (Code Patch Heap, or the use patch code downloaded from a network node (Client) configured to emit at an instrumentation point. For example, patch code such as ELF object file discussed in p 51. Furthermore, see Figure 4.1 in p. 49, it shows a mechanism configured to implement patch code at an instrument point).

As per claim 12: Tamches discloses, *The apparatus of claim 11, further comprising: a consumer configured to claim the anonymous consumer state* (See Figure 3.1, it is configured to perform the functionality of this claim).

As per claims 13-14: See rationale addressed in claims 2-3.

As per claim 15: See rationale addressed in claim 4.

As per claim 16: Tamches discloses the functionality of claim 16 in Figure 3.1.

As per claim 17: Tamches discloses the functionality of claim 17, as such runtime kernel.

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As per claim 18: Tamches discloses the functionality of claim 18, as such the probe at an instrument point in a kernel code gram shown in Figure 4.1, p. 49.

As per claim 19: Tamches discloses the *apparatus of claim 11, wherein the object code is generated using tracing operation source code*, such as using the mechanism of Figure 3.1, a patch code is created and emitted in kernel code.

As per claim 20: See rationale addressed in claim 11, where a node is a client or a user whose computer uses, or is connected to, the framework shown in Figure 3.1.

As per claim 21: See rationale addressed in claim 12.

As per claim 22: *The network system of claim 20, further comprising:*

*a tracing framework driver associated with the property file configured to  
instantiate the tracing framework; and*

*a kernel configured to load the tracing framework driver and configured to process  
the property file to enable to the tracing framework.*

See Figure 3.1.

As per claim 23: See rationale addressed in claim 1.

As per claim 24: See rationale addressed in claim 2.

As per claim 25: See rationale addressed in claim 6.

### **Conclusion**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted T. Vo whose telephone number is (571) 272-3706. The examiner can normally be reached on 8:00AM to 4:30PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wei Y. Zhen can be reached on (571) 272-3708.

The facsimile number for the organization where this application or proceeding is assigned is the Central Facsimile number **571-273-8300**.

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Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTV  
February 02, 2007



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PRIMARY EXAMINER  
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